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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/943,535 | 08/30/2001 | Graham Andrew Cairns | YAMAP0777US | 9423 |

7590 07/12/2004
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EXAMINER

LAO, LUN YI

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2673

DATE MAILED: 07/12/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/943,535

Applicant(s)

GRAHAM ANDR

Examiner

Lao Y Lun

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 17-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2 & 9.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 5, 9 and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakagiri(6,396,465).

As to claims 1, 5, 9 and 12-14, Nakagiri teaches a driving arrangement for an active matrix liquid crystal display comprising: (a) a multi-format digital data driver arranged to operate in a plurality of different display modes(4096 color mode or 65,536 color mode or 16A-16B)(see figures 6A-6B; 11A-12; column 3, lines 5-17; column 7, lines 1-4 and lines 54-68; and column 8, lines 1-12), to receive digital input data in a plurality of different color formats(4 or 5 or 6 bits), and to drive data lines of the liquid crystal display so as to cause an image to be displayed by the display corresponding to the input data; and (b) data analysis means(1, 2, 5 or 101, 102) arranged to receive the digital input data, to determine the format of the input data, and to control the data driver(17) to operate in the display mode corresponding to

the format of the input data(see figures 1-7, 10; column 1, 48-66; column 6, lines 39-68; column 7, lines 5-53).

As to claim 5, Nakagiri teach the analysis means(1, 2, 5 or 101-102) updating the mode of the data driver at the end of each frame(see figures 2-4, 10-12, 16; column 1, lines 60-66; column 3, lines 5-33).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagiri in view of Shimada(5,396,166).

Nakagiri fails to point out a data driver consume less power in a low resolution display mode than in a high resolution display mode.

Shimada teaches a display device comprising a data driver for consuming less power in a low resolution display mode(only 13, 14 are used) than in a high resolution display mode(13-16 are used)see figures 1, 3, 6A-6D; abstract; column 1, 53-68; column 2, lines 1-12; column 4, lines 49-62 and column 5, lines 43-50). It would have been obvious to have modified Nakagiri with the teaching of Shimada, so as to save the

consumption power for display of image while leaving the minimum information required by the user on the screen(see column 2, lines 6-27).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagiri in view of Daher(5,327,254).

Nakagiri fails to disclose a 1-bit overlay mode.

Daher teaches a display device having a on-bit overlay mode(see column 11, lines 52-60 and column 12, lines 1-6). It would have been obvious to have modified Nakagiri with the teaching of Daher, so as to efficiently provide a high quality picture.

6. Claims 6-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakagiri in view of Koyama et al(5,767,832).

Nakagiri fails to disclose a data driver for providing a lower refresh rate if the input data has remained unchanged.

Koyama et al teach an LCD display driving circuit comprising data driver for outputting a lower refresh rate if the input data has remained unchanged(see figures 1-2; abstract; column 2, lines 3-10 and column 6, lines 53-59). It would have been obvious to have modified Nakagiri with the teaching of Koyama et al, so as to save power(see abstract and column 1, lines 51-61).

As to claim 8, Koyama teach an LCD display driving circuit having data analysis means having an OR gate(see figure 2 and column 5, lines 5-31).

7. Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Nakagiri(6,396,465) in view of Cairns et al(EP 0,930,716).

Nakagiri fails to disclose a variable bit digital to analog converter.

Cairns teach an LCD display driver having a variable bit digital to analog converter(see figures 5, 7, 13-14; column 6, lines 39-58; column 7, lines 1-35 ; column 13, lines 28-58 and column 14, lines 1-8). It would have been obvious to have modified Nakagiri with the teaching of Cairns, so as to provide a more efficient digital to analog converter for performing gamma correction(see column 4, lines 9-39 and column 14, lines 3-8).

8. Claims 2 and 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakagiri(6,396,465) in view of Misawa et al(5,250,931).

Nakagiri fails to disclose the driving means and the thin film transistors of the active matrix arranged in the same substrate.

Misawa et al teach an LCD display having driving means(12, 21) and the thin film transistors(29) of the active matrix arranged in the same substrate(11)(see figure 1; abstract and column 4, lines 43-68). It would have been obvious to have modified Nakagiri with the teaching of Misawa et al, so as to reduce the number of connecting wires, ensure more stable connections, minimize space and the number of parts in providing the display control circuitry.

Response to Arguments

9. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cairns et al(6,44,323) teach a multi-format LCD display.

Miller(5,132,670) teach a color overlay mode.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lun-yi, Lao whose telephone number is (703) 305-4873.

If attempts to reach the examiner by telephone are unsuccessful, the

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examiner's supervisor, Bipin Shalwala, can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

June 30, 2004

Lun-yi Lao
Primary Examiner